

5/13

DART AEROSPACE LTD	Work Order:	22537
Description: Ø2.750 Support	Part Number:	D2893-1
Dwg: D2893 Rev. A1	Qty:	20
		Page 1 of 1

23.06.09

Step	Location	Procedure	By	Date	Qty
1	DC	Issue Traveller. Blank size makes (2) D2893-1 Dwg not required	HA	05.02.23	20
2	PG	Issue P/O: <u>700.703</u> Description: D6104-005 Material: 17-4 PH SS (AMS 5643 OR AISI 630) as per Dwg D6104 Material release note required.	U	05.02.24	20
3	RG	Receive and Inspect for raw material dimensions. Ensure material release note is attached.	CL	05/03/07	10
4	MS	Turn blank for Haas as per Folio FA081	me	05/04/04	10
5	QC1	Inspect all dimensions as per Dwg D2893	me	05/04/04	10
6	MV	Machine as per Folio FA081	EL/JL	05/04/11	10
7	MV	Tumble & Deburr	EL/JL	05/04/11	40
8	QC1	Inspect all dimensions to inspection sheet as per Dwg D2893	JL	05/04/11	10
9	QC8	Inspect dimensions for second check	EP	05/04/11	10
10	FP	Powder Coat White (4.3.5.2) per QSI 005 4.3	ML	05/04/11	10
11	QC3	Inspect Powder Coat	DP	05/4/13	20
12	ST	Identify and stock	EP	05/4/14	20
13	AC	Cost / part <u>121.65</u>	Sgt	05-04-19	20
14	DC	Close W/O <u>121.65</u> Inspect Level 21	HA	05.04.20	20

Rev	Date	Change	Revised By	Approved
A	01.01.08	Preliminary Issue	EC	
B	01.07.19	Heat treat removed	NG	
C	02.11.26	Reformat; Added P/O	KJ	

RELEASED
02.11.29 RF

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR: 72537		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			
05.04.11	4	Dim. 0.050 \pm 0.01 is reading - 0.031 (0.009" under) - 0.036 (0.004" under) 2 parts affected	CP	PARTS OK per DS recommendation	VB 05.04.20	VB 05.04.12 CP 05.04.20	CP 05.04.12 per DS 42	VB 05.04.20

Part No: D2893-1 PAR #: _____ Fault Category: _____ NCR: Yes ☐ No ☒ DQA: 1 Date: 05/04/20

NOTE: Date & initial all entries QA: N/C Closed: _____ Date: _____

DART AEROSPACE LTD	Work Order: 22537
Description: Ø2.750 Support	Part Number: D2893-1
Inspection Dwg: D2893 Rev. A1	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev A1/DSK078 Rev A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	By	Date
Lathe Section									
A	2.707	2.712		2.710	2.712	2.712	2.712	JAL	05/04/04
B	4.946	4.966		4.958	4.955	4.957	4.957		
C	3.064	3.084		3.069	3.075	3.075	3.074		
D	0.718	0.738		0.725	0.726	0.728	0.726		
E	0.090	0.110		0.099	0.100	0.106	0.101		
F	2.934	2.954		2.937	2.947	2.948	2.947		
G	2.166	2.186		2.174	2.178	2.176	2.174		
H	3.890	3.910		3.894	3.899	3.898	3.899		
I	0.914	0.934		0.926	0.926	0.928	0.926		
J	0.022	0.042		0.032	0.032	0.032	0.032		
K	0.109	0.129		0.116	0.115	0.112	0.115		
L									
HAAS Section									
AA	2.985	3.005		3.000	2.998	2.999	2.996		
AB	0.440	0.460		.440	.440	.440	.440		
AC	0.125	0.160		.144	.150	.145	.143		
AD	0.040	0.060		.050	.040	.040	.040		
AE	0.188	0.193	DT8706	.190	.190	.191	.190		
AF	0.125	0.160		.140	.140	.142	.143		
AG	0.140	0.160		.155	.156	.149	.150		
AH	1.360	1.400		1.385	1.387	1.386	1.386		
AI	0.040	0.060		.045	.049				
AJ	1.190	1.230		1.224	1.228	1.228	1.227		
AK	0.010	0.020							
AL	0.053	0.073		.060	.060	.060	.060		
AM	0.240	0.260		.240	.240	.240	.240		
AN	2.518	2.538		2.528	2.528	2.528	.240		
AO	84.39	90.39	DT8699						
AP	0.257	0.262	DT8683	.260	.259	.260	.259		
AQ	0.053	0.073		.060	.060	.06	.060		
AR									
AS									
Accept/Reject									

Measured by: J.G. / JAL
Date: 31/03/05

Audited by: En
Date: 05/04/12

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	JF

RELEASED
03.07.01

DART AEROSPACE LTD		Work Order:	22537
Description: Ø2.750 Support		Part Number:	D2893-1
Inspection Dwg: D2893 Rev. A1		Page 1 of 1	

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev A1/DSK078 Rev A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	By	Date
Lathe Section									
A	2.707	2.712		2.709	2.708	2.709	2.712		
B	4.946	4.966		4.957	4.957	4.956	4.955		
C	3.064	3.084		3.075	3.075	3.074	3.074		
D	0.718	0.738		0.726	0.726	0.728	0.726		
E	0.090	0.110		0.100	0.101	0.101	0.101		
F	2.934	2.954		2.946	2.947	2.945	2.946		
G	2.166	2.186		2.175	2.174	2.175	2.174		
H	3.890	3.910		3.899	3.899	3.897	3.898		
I	0.914	0.934		0.930	0.929	0.926	0.923		
J	0.022	0.042		0.032	0.032	0.032	0.032		
K	0.109	0.129		0.118	0.118	0.118	0.114		
L									
HAAS Section									
AA	2.985	3.005		3.000	2.997	2.995	2.993		
AB	0.440	0.460		.440	.440	.440	.440		
AC	0.125	0.160		.144	.143	.145	.145		
AD	0.040	0.060		.050	.040	.040	.040		
AE	0.188	0.193	DT8706	.190	.190	.190	.190		
AF	0.125	0.160		.140	.141	.140	.143		
AG	0.140	0.160		.155	.153	.155	.149		
AH	1.360	1.400		1.385	1.384	1.385	1.388		
AI	0.040	0.060		.045	.042	.045	.043		
AJ	1.190	1.230		1.224	1.228	1.230	1.230		
AK	0.010	0.020							
AL	0.053	0.073		.06	.06	.060	.060		
AM	0.240	0.260		.240	.240	.240	.240		
AN	2.518	2.538		2.528	2.528	2.528	2.528		
AO	84.39	90.39	DT8699						
AP	0.257	0.262	DT8683	.260	.259	.258	.259		
AQ	0.053	0.073		.060	.060	.060	.060		
AR									
AS									
Accept/Reject									

Measured by:	B.G. / gml
Date:	05/04/04

Audited by:	Er
Date:	05/04/22

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	

RELEASED
03.07.01

DART AEROSPACE LTD		Work Order:	22537
Description: Ø2.750 Support		Part Number:	D2893-1
Inspection Dwg: D2893 Rev. A1		Page 1 of 1	

Inspect dimensions highlighted on inspection sheet drawing D2893 Rev A1/DSK078 Rev A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	By	Date
Lathe Section									
A	2.707	2.712		2.709	2.709				
B	4.946	4.966		4.958	4.954				
C	3.064	3.084		3.074	3.075				
D	0.718	0.738		0.726	0.733				
E	0.090	0.110		0.106	0.092				
F	2.934	2.954		2.946	2.946				
G	2.166	2.186		2.179	2.175				
H	3.890	3.910		3.901	3.901				
I	0.914	0.934		0.929	0.930				
J	0.022	0.042		0.032	0.032				
K	0.109	0.129		0.116	0.118				
L									
HAAS Section									
AA	2.985	3.005		2.995	2.994				
AB	0.440	0.460		.440	.440				
AC	0.125	0.160		.145	.147				
AD	0.040	0.060		.040	.040				
AE	0.188	0.193	DT8706						
AF	0.125	0.160		.143	.145				
AG	0.140	0.160		.155	.148				
AH	1.360	1.400		1.386	1.380				
AI	0.040	0.060		.046	.042				
AJ	1.190	1.230		1.229	1.225				
AK	0.010	0.020							
AL	0.053	0.073		.060	.060				
AM	0.240	0.260		.240	.240				
AN	2.518	2.538		2.528	2.528				
AO	84.39	90.39	DT8699						
AP	0.257	0.262	DT8683	.259	.259				
AQ	0.053	0.073		.060	.060				
AR									
AS									
Accept/Reject									

Measured by:	me
Date:	05/04/04

Audited by:	Er
Date:	05/04/12

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	RF

RELEASED
03.07.01

Job Costing Report

Dart Aerospace Ltd.
Hawkesbury

Feb 23, 2005
10:16 am

Work Order No : 0022537
Project Name : D2893-1
Project For : WK513
Work Order Type : Main
Main WO Number :
House Part Number : D2893-1
Description : Support
Manufactured : Yes
Amount Req'd : 20
Amount Done : 0
Start Date : 02-23-05
Est Finish Date : 03-15-05
Act Finish Date :
Drawings Req'd : No
Ok for Approval :
Approval Rec'd :

Department Code:
Burden Flags : NNNNNNNN
WO Status : Open
Invoice State : Not Invoiced
Invoice Date :
Invoice Number :
Invoice Amount : 0.00

Order Entry No :
OE Value : 0.00

Est Margin : 0.000%
Actual Margin : 0.000%

\$0 Posted to Finished Goods

	Estimated	Actual	Var. %	Posted	To Post
Material Cost :	0.00	0.00	0.00	0.00	0.00
Engineering Hours :	0.00	0.00	0.00		
Engineering Cost :	0.00	0.00	0.00	0.00	0.00
Production Hours :	0.00	0.00	0.00		
Production Cost :	0.00	0.00	0.00	0.00	0.00
Packaging Hours :	0.00	0.00	0.00		
Packaging Cost :	0.00	0.00	0.00	0.00	0.00
OverHead Hours :	0.00	0.00	0.00		
OverHead Cost :	0.00	0.00	0.00	0.00	0.00
CNC Hours :	0.00	0.00	0.00		
CNC :	0.00	0.00	0.00	0.00	0.00
Misc. Hours :	0.00	0.00	0.00		
Misc. :	0.00	0.00	0.00	0.00	0.00
Burden :	0.00	0.00	0.00		
Total Cost :	0.00	0.00	0.00		
Margin :	0.000	0.000			
Selling Cost :	0.00	0.00			

	Estimated	Actual
Labour Hrs/Amount Done :	0.00	0.00
Profits/(Loss) :	0.00	0.00

CERTIFICATE OF TESTS

CERT SERIAL# 000483396



TALLEY METALS
A Carpenter Company

Talley Metals Technology, Inc
P.O. Box 2498
Hartsville, SC 29551 Tel. 843.335.7540 Fax. 843.335.6465

ABNAHMEPRUEFZEUGNIS

CERTIFICAT DE CONTROLE

- THE RECORDING OF FALSE, FICTICIOUS OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHED AS A FELONY UNDER FEDERAL STATUTES INCLUDING FEDERAL LAW, TITLE 18, CHAPTER 47.
- THE VALUES AND OTHER TECHNICAL DATA REPRESENT THE RESULTS OF ANALYSES AND TESTS MADE ON SAMPLES COLLECTED FROM THE TOTAL LOT. ORIGINAL DATA RECORDS CAN BE TRACED BY REFERENCE TO THE CARPENTER ORDER NUMBER.
- MATERIAL IS MANUFACTURED FREE FROM MERCURY, RADIUM, ALPHA AND GAMMA SOURCE CONTAMINATION.
- THIS DOCUMENT SHALL NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT THE WRITTEN CONSENT OF CARPENTER TECHNOLOGY CORPORATION.

12/28/04

CUSTOMER / BESTELLER / CLIENT

SELLER / VERKÄUFER / VENDEUR PAGE 1 OF 2

COPPER & BRASS SALES
22355 W ELEVEN MILE
SOUTHFIELD , MI 48034

HVL

CUSTOMER ORDER NO. / BESTELL-NR. / N° DE COMMANDE	CARPENTER NO. / WERKS-NR. / N° DE REFERENCE INTERNE	DATE / DATUM / DATE	WEIGHT / GEWICHT / POIDS
C91353-01	W66462	12/28/04	5810

HEAT NUMBER / SCHMELZE-NR. / N° DE COULEE: G9745

PRODUCT DESCRIPTION: TYPE 17-4 MAXX SOLUTION ANNEALED ROUGH TURNED
----- PART NUMBER: 408860-5

SPECIFICATION: TALLEY 174-T1A CAP OF H900 (01/11/99)

AMS 2303 REV E (10/ /01)
AMS 2315 REV E (04/ /01)
AMS 5643 REV Q (01/ /03) (EXCEPT CD ROUND CHEM & MECH PROPS ONLY)
ASTM-A484-03A
ASTM-A564-04
ASME-SA564 2001 EDITION

SIZE 4.000000 IN. (101.60 MM) RD BAR

PRIMARY HEAT CHEMISTRY (WT%):

C	MN	SI	P	S	CR
0.032	0.78	0.35	0.026	0.026	15.41
NI	MO	CU	N	CB	TA
4.35	0.18	3.72	0.033	0.24	0.01
CB+TA					
0.25					

DISCS MACROETCHED AND APPROVED

HARDNESS AS SHIPPED, HB - 340 (MIDRADIUS)

MAGNETIC PARTICLE: FREQUENCY = 0 / SEVERITY = 0

MICROSTRUCTURE - FERRITE 1.35%

CONTINUED ON NEXT PAGE

This certification is made to the customer printed on this form. Carpenter neither makes, nor assumes responsibility for, any representation or certification to other parties.
Die vorliegende Zertifizierung ist nur für den in diesem Formular genannten Kunden gültig. Carpenter übernimmt gegenüber Dritten keinerlei Haftung für die ausgewiesenen Daten oder Zertifizierungen.
Ce certificat est uniquement valable pour le client dont le nom est imprimé sur ce formulaire. Carpenter n'assume pas de responsabilité pour une certification vis-à-vis d'une tierce personne.

CERTIFICATE OF TESTS

CERT SERIAL# 000483396



TALLEY METALS
A Carpenter Company

Talley Metals Technology, Inc

P.O. Box 2498

Hartsville, SC 29551 Tel. 843.335.7540 Fax. 843.335.6465

12/28/04

CUSTOMER / BESTELLER / CLIENT

SELLER / VERKÄUFER / VENDEUR PAGE 2 OF 2

COPPER & BRASS SALES
22355 W ELEVEN MILE
SOUTHFIELD , MI 48034

HVL

CUSTOMER ORDER NO./BESTELL-NR./N° DE COMMANDE	CARPENTER NO./WERKS-NR./N° DE REFERENCE INTERNE	DATE/DATUM/DATE	WEIGHT/GEWICHT/POIDS
C91353-01	W66462	12/28/04	5810

HEAT NUMBER / SCHMELZE-NR. / N° DE COULEE :

G9745

CAPABILITY

900 F(482 C), 01 HR

AIR COOL

YIELD STRENGTH, (0.20 %) KSI(MPA)	195.0(1344)
TENSILE STRENGTH, KSI(MPA)	206.0(1420)
ELONGATION IN 2.00", %	14.0
REDUCTION OF AREA, %	46.0
HARDNESS , HB	408.0

(CONVERTED FROM TENSILE STRENGTH)

MATERIAL WAS MELTED AND MANUFACTURED IN THE USA.
NO WELD REPAIR

WE HEREBY CERTIFY THAT THE ABOVE TEST DATA ARE IN ACCORDANCE WITH THE
PURCHASE ORDER AND SPECIFICATION REQUIREMENTS.

STEPHANIE E. MCCULLUM
QUALITY ASSURANCE ENGINEER
CARPENTER TECHNOLOGY CORPORATION

Stephanie E. McCullum

This certification is made to the customer printed on this form. Carpenter neither makes, nor assumes responsibility for, any representation or certification to other parties.
Die vorliegende Zertifizierung ist nur für den in diesem Formular genannten Kunden gültig. Carpenter übernimmt gegenüber Dritten keinerlei Haftung für die ausgewiesenen Daten oder Zertifizierungen.
Ce certificat est uniquement valable pour le client dont le nom est imprimé sur ce formulaire. Carpenter n'assume pas de responsabilité pour une certification vis-à-vis d'une tierce personne.

Chris Provencal

From: "David Shepherd" <davids@dartaero.com>
To: "Chris Provencal" <chrisp@dartaero.com>
Sent: April 5, 2005 2:30 PM
Subject: Re: Xtube support problem

I recommend that we buff out this groove. The part can be up to 0.020" under tolerance and I will be OK with it. We should figure out exactly what the problem is before we make more. Somehow, by tool or by chips, we are cutting too deep.

David

----- Original Message -----

From: Chris Provencal
To: David Shepherd
Sent: Tuesday, April 05, 2005 11:40 AM
Subject: Xtube support problem

For some reason the program is making a groove in the D2893-1 support, they don't know why, supposidly the program looks good. They have a few parts like this (see picture). They have a circumferencial groove, looks about 0.010"x0.010". The said the could buff it out but its likely to show.

Sincerely,

Chris Provencal

DART Aerospace Ltd.

Email...chrisp@dartaero.com

Phone...613-632-3336

Fax.....613-632-4443

12/04/2005